



Docket: 33811/US

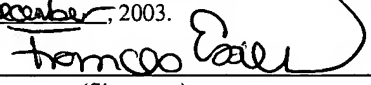
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Ni Zugen	Examiner:	Unknown
Appln. No.:	10/726,063	Group Art	
Filed:	December 2, 2003	Unit:	Unknown
Title:	Silencer for Vacuum Cleaner		

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Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

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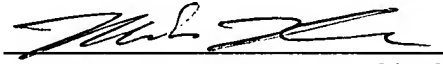
Dear Sir:

Pursuant to 35 U.S.C. §119, to perfect the claim for foreign priority benefits in the above-identified patent application, enclosed for filing is a certified copy of the original Chinese Application No. 03 1 52869.4, filed on August 26, 2003, including specification and drawings, along with a Certificate.

Respectfully submitted,

DORSEY & WHITNEY LLP
Customer Number 25763

Date: Dec. 15, 2003

By: 
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证 明

本证明之附件是向本局提交的下列专利申请副本

申 请 日： 2003 08 26

申 请 号： 03 1 52869.4

申 请 类 别： 发明

发明创造名称： 吸尘器消音装置

申 请 人： 苏州金莱克清洁器具有限公司

发明人或设计人：倪祖根

中华人民共和国
国家知识产权局局长

王 景 川

2003 年 10 月 29 日

权 利 要 求 书

1. 一种吸尘器用消音装置，其特征在于：该装置包括有一块以上的、安装在出风通道(3)内的消音隔板(1)，消音隔板(1)上布有小孔(2)。
2. 根据权利要求 1 所述的吸尘器用消音装置，其特征在于：所述消音隔板(1)与出风通道(3)内的气流方向垂直。
3. 根据权利要求 1 所述的吸尘器用消音装置，其特征在于：所述消音隔板(1)的小孔(2)的总透气面积小于出风通道(3)的截面积的 0.5 倍。
4. 根据权利要求 1 所述的吸尘器用消音装置，其特征在于：所述消音隔板(1)上的小孔(2)的直径小于 6 毫米。
5. 根据权利要求 1 所述的吸尘器用消音装置，其特征在于：所述消音隔板(1)的厚度大于 0.5 毫米。

说明书

吸尘器消音装置

技术领域

本发明涉及一种吸尘器消音装置。

背景技术

传统的吸尘器的出风消音是通过增加风道曲折性，也就是迷宫式的风道，使得声波在传播过程中的能量损失以及通过风道转弯处安置多孔吸声材料来吸收声能，从而达到降噪的目的，这种结构的主要缺点是消音降噪效果比较差。

发明内容

本发明的目的是：提供一种吸尘器用消音装置，该装置利用安装在出风通道内的一块或多块消音隔板，可以大大降低吸尘器在使用时发出的噪音。

本发明的技术方案是：一种吸尘器用消音装置，该装置包括有一块以上的、安装在出风通道内的消音隔板，消音隔板上布有小孔。

本发明进一步的技术方案是：一种吸尘器用消音装置，该装置包括有一块以上的、安装在出风通道内的消音隔板，消音隔板上布有小孔；所述消音隔板与出风通道内的气流方向垂直。

本发明更详细的技术方案是：一种吸尘器用消音装置，该装置包括有一块以上的、安装在出风通道内的消音隔板，消音隔板上布有小孔；所述消音隔板与出风通道内的气流方向垂直；所述消音隔板的小孔的总透气面积小于出风通道的截面积的 0.5 倍；所述消音隔板上的小孔的直径小于 6 毫米；所述消音隔板的厚度大于 0.5 毫米。

本发明的优点是：

1. 本发明利用安装在出风通道内的一块或多块消音隔板，可以大大降低吸尘器在使用时发出的噪音。

2. 本发明的消音隔板可以单独安装在出风通道内，也可以安装在扩张室中，扩张室连接在出风通道上，安装在扩张室中的降噪效果更好。

附图说明

下面结合实施例对本发明作进一步的描述：

图 1 为本发明的结构示意图；

其中：1 消音隔板；2 小孔；3 出风通道。

具体实施方式

实施例：如图 1 所示，一种吸尘器用消音装置，该装置包括有三块安装在出风通道(3)内的消音隔板(1)，消音隔板(1)上布满小孔(2)，消音隔板(1)与出风通道(3)内的气流方向垂直，消音隔板(1)的小孔(2)的总透气面积小于出风通道(3)的截面积的 0.5 倍，消音隔板(1)上的小孔(2)的直径小于 6 毫米，消音隔板(1)的厚度大于 0.5 毫米。

本利用安装在出风通道(3)内的一块或多块消音隔板(1)，可以大大降低吸尘器在使用时发出的噪音；本发明的消音隔板(1)可以单独安装在出风通道(3)内，也可以安装在扩张室中，扩张室连接在出风通道(3)上，安装在扩张室中的降噪效果更好。

说明书附图

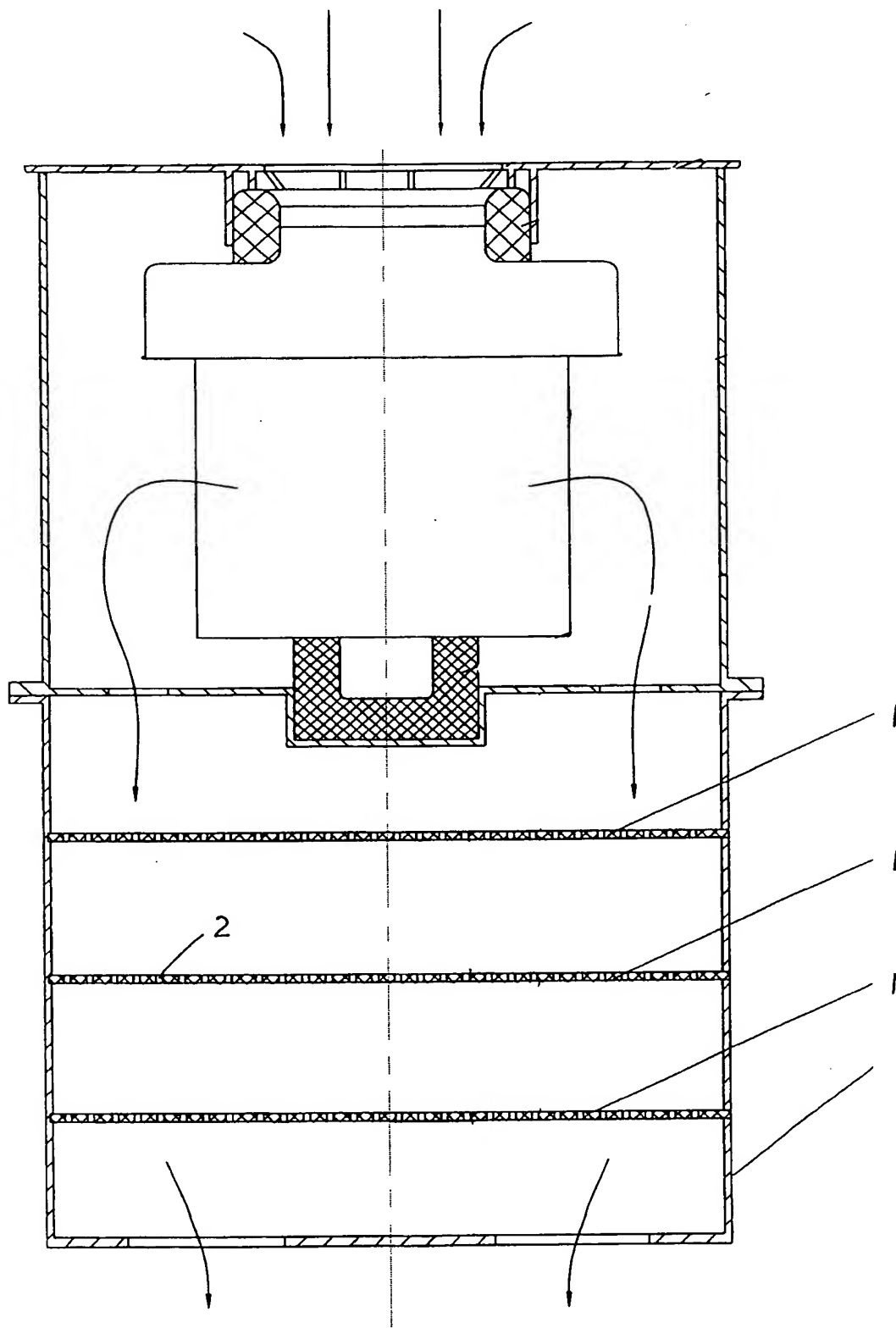


图 1

CERTIFICATE

The annex to this certificate is a copy of the application filed with the present office:

Application Date: 2003 08 26

Application Number: 03 1 52869.4

Application Type: Invention

Title of Invention: Silencer for Vacuum Cleaner

Applicant: NI, Zugen

Inventor or Designer: NI, Zugen

Commissioner of
the State Intellectual Property Office
of the People's Republic of China

WANG Jingchuan

29 October 2003

Silencer for Vacuum Cleaner

Field of the Invention

The invention relates to a silencer for a vacuum cleaner.

Background of the Invention

In conventional exhaust air silencers for vacuum cleaners, the noise is reduced by means of increasing the tortuosity of the airflow channel, i.e. by using labyrinthic airflow channels, to dissipate sound energy and by means of disposing porous sound-absorbing materials at the turning corners of the airflow channel to absorb sound energy. Poor noise silencing effect, however, is the main disadvantage of the above-mentioned silencing structures.

Summary of the Invention

The object of the invention is to provide a silencer for a vacuum cleaner, which utilizes one or more silencing boards mounted in the exhaust channel to considerably diminish the noise generated by a vacuum cleaner in operation.

In one aspect of the invention, a silencer for a vacuum cleaner comprises at least one silencing board mounted in an exhaust channel of the vacuum cleaner. A plurality of pores are distributed throughout in the silencing board.

In a further aspect of the invention, a silencer for a vacuum cleaner comprises at least one silencing board mounted in an exhaust channel of the vacuum cleaner. A plurality of pores are distributed throughout in the silencing board. The silencing board is mounted in an orientation perpendicular to the direction of the airflow passing through the exhaust channel.

In a more detailed aspect of the invention, a silencer for a vacuum cleaner comprises at least one silencing board mounted in an exhaust channel of the vacuum cleaner. A plurality of pores are distributed throughout in each of the at least one silencing board. The silencing board is mounted in an orientation perpendicular to the direction of the airflow through the exhaust channel. The total passage area of the pores

is less than half of the cross-sectional area of the exhaust channel. The diameter of each pore in the silencing board is less than 6 mm, and wherein the thickness of the silencing board is larger than 0.5 mm.

The invention provides the following advantages:

1. In the invention, one or more silencing boards are mounted in the exhaust channel, which can effectively diminish the noise generated by a vacuum cleaner in operation.

2. The silencing board(s) of the invention can be directly mounted in the exhaust channel, or be mounted in an expansion chamber connected to the exhaust channel. The latter with the silencing board(s) mounted within an expansion chamber will obtain a better effect of noise reduction.

Brief Description of the Drawings:

Fig. 1 is a sectional view schematically illustrating a silencer for a vacuum cleaner according to the preferred embodiment of the present invention, wherein:

the numeral 1 denotes a silencing board, 2 denotes pores, and 3 denotes an exhaust channel.

Detailed Description of the Preferred Embodiment

The invention is described below with reference to the preferred embodiment of the invention shown in Fig. 1.

As shown in Fig. 1, a silencer for a vacuum cleaner comprises three silencing boards 1 mounted in the exhaust channel 3. A plurality of pores 2 are distributed throughout in each of the silencing boards 1. Each of the silencing board 1 is mounted in an orientation perpendicular to the direction of the airflow passing through the exhaust channel 3. The total passage area of the pores 2 in each of the silencing boards 1 is less than half of the cross-sectional area of the exhaust channel 3. The diameter of each of the pores 2 in the silencing boards 1 are less than 6 mm and the thickness of each of the silencing boards 1 is larger than 0.5 mm.

In the invention, one or more silencing boards 1 are mounted in the exhaust

channel 3, which can effectively reduce the noise generated by a vacuum cleaner in operation. The silencing board(s) 1 of the invention can be directly mounted in the exhaust channel 3, or be mounted in an expansion chamber connected to the exhaust channel 3. The latter with the silencing board(s) mounted within an expansion chamber will obtain a better effect of noise reduction.

Claims

1. A silencer for a vacuum cleaner, which comprises at least one silencing board (1) mounted in an exhaust channel (3) of the vacuum cleaner for passage of an exhaust airflow from the vacuum cleaner, with a plurality of pores (2) distributed throughout in the silencing board (1).

2. A silencer for a vacuum cleaner according to Claim 1 wherein the silencing board (1) is mounted in an orientation perpendicular to the direction of the airflow passing through the exhaust channel (3).

3. A silencer for a vacuum cleaner according to Claim 1 wherein the total passage area of the pores (2) is less than half of the cross-sectional area of the exhaust channel (3).

4. A silencer for a vacuum cleaner according to Claim 1 wherein the diameter of each of the pores (2) in the silencing board (1) is less than 6 mm.

5. A silencer for a vacuum cleaner according to Claim 1 wherein the thickness of the silencing board (1) is larger than 0.5 mm.

Abstract

The present invention provides a silencer for a vacuum cleaner. The silencer for the vacuum cleaner comprises at least one silencing board mounted in an exhaust channel of the vacuum cleaner for passage of an exhaust airflow from the vacuum cleaner. A plurality of pores are distributed throughout in the silencing board. The silencing board is mounted in an orientation perpendicular to the direction of the airflow through the exhaust channel. The silencer for a vacuum cleaner can considerably diminish the noise generated by the vacuum cleaner in operation.

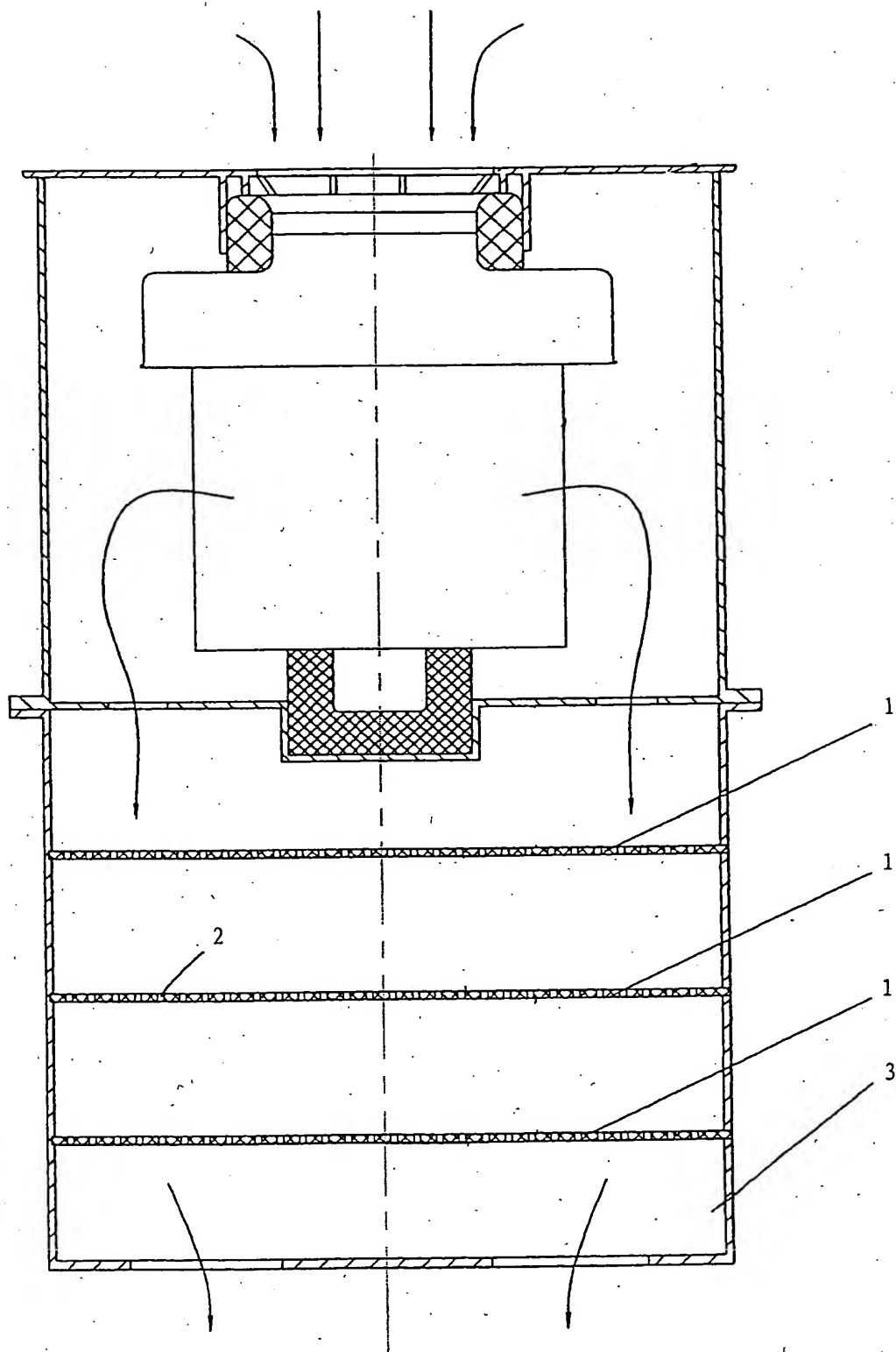


Fig. 1